

YAKIMA PHASE 2 SCREEN FABRICATION

9105700

SHORT DESCRIPTION:

Fabricate fish screens to divert anadromous salmonids from Yakima tributary irrigation canals.

SPONSOR/CONTRACTOR: WDFW, YSS

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SUB-CONTRACTORS:

Hi-Tech Industrial Coatings, Inc.; U.S. Bureau of
Reclamation, Yakima Field Office, Fish Facilities Branch

GOALS

GENERAL:

Supports a healthy Columbia basin, Maintains biological diversity, Maintains genetic integrity, Increases run sizes or populations

ANADROMOUS FISH:

Habitat or tributary passage

NPPC PROGRAM MEASURE:

7.11B.1

RELATION TO MEASURE:

YSS fabricates fish screens and all miscellaneous metalwork for Yakima Basin Phase II screen projects. New fish screens prevent loss of juvenile anadromous and resident fish in gravity irrigation diversions.

TARGET STOCK

Naches Steelhead
Naches Spring Chinook
Yakima Steelhead
Yakima Spring Chinook

LIFE STAGE

Juveniles
Juveniles
Juveniles
Juveniles (fry, parr, smolts)

MGMT CODE (see below)

N, P, W
N, W
S, P, W
S, W

AFFECTED STOCK

Naches Resident Trout
Yakima Resident Rainbow Trout

BENEFIT OR DETRIMENT

Beneficial
Beneficial

BACKGROUND

STREAM AREA AFFECTED

Stream name:

Yakima R. & tributaries (Naches R., Teanaway R.,
Ahtanum Cr., etc.)

Subbasin:

Yakima

Stream miles affected:

All stream reaches used by anadromous fish

Land ownership:

Public (BPA owns screen & land)

Hydro project mitigated:

N/A

Habitat types:

N/A

HISTORY:

Completion of shop fabrication, delivery and field installation of fish screens, fish bypass control systems, lifting gantries and misc. metalwork or conversion/decommissioning of 22 Phase 2 diversions since FY91. Project is ongoing with six new facilities being fabricated for the 1997 irrigation season. Correct historic obligations for Yakima Phase 2 in FY92 and FY93 are \$453,989

and \$444,281, respectively, because funding for Umatilla River screens and for portable screens for Oregon and Idaho was also provided under this project number. The obligation for Umatilla River (Stanfield) was \$125,369 in FY1992, and the amount for modular screens for Oregon and Idaho was \$203,000 in FY1993. Total obligation for Yakima Basin Phase 2 screen fabrication through FY97 is \$1,975,915.

BIOLOGICAL RESULTS ACHIEVED:

Biological evaluation of Phase 2 fish screens and bypass systems by BPA's contractor, Pacific Northwest Labs (Battelle), has shown juvenile salmonid survival and guidance rates approaching 100% (range: 95-99%). Survival/guidance rates at the pre-Phase 2, Wapatox Diversion (Naches R. circa 1936) were 60-75% for yearling smolts and less than 10% for age 0 steelhead and spring chinook salmon based on studies conducted by the diversion owner, PacifiCorp.

PROJECT REPORTS AND PAPERS:

Not Applicable--biological evaluation technical reports by others.

ADAPTIVE MANAGEMENT IMPLICATIONS:

Knowledge gained from fish screen evaluation studies performed by Pacific Northwest Labs (Proj. 8506200) and by YSS staff performing Phase 2 screen O&M (Proj. 9200900) is used in a feedback process to: 1) improve screen fabrication processes for subsequent Phase 2 projects under this project, and 2) improve screen design and civil works construction under BOR's companion project (9107500).

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:

Complete replacement or upgrade of all obsolete fish screen facilities in the Yakima Basin by the end of FY 2001. Most of these screens date from the late 1940's, 50's and 60's, however several facilities still in operation were constructed in the mid-1930's.

CRITICAL UNCERTAINTIES:

None

BIOLOGICAL NEED:

Obsolete fish screen facilities dating from the 1930's, 40's, 50's and 60's need to be replaced or updated to comply with current regional fish screening protection criteria adopted by CBFWA's Fish Screening Oversight Comm. (FSOC). The current criteria objective is to provide protection approaching 100% for all species and life stages of anadromous salmonids. Old screens in the Yakima sub-basin, and elsewhere in the Columbia Basin, provide fair protection for yearling smolts, but poor protection for fry and fingerling life stages. Premature "cropping" of fry and fingerlings by irrigation diversions reduces subsequent smolt production and interferes with efforts to restore depressed salmon and steelhead populations through natural production or hatchery supplementation.

HYPOTHESIS TO BE TESTED:

Not Applicable

ALTERNATIVE APPROACHES:

Not Applicable

JUSTIFICATION FOR PLANNING:

Not Applicable (project provides tangible on-the-ground survival benefits to juvenile salmonids)

METHODS:

Not Applicable

PLANNED ACTIVITIES

SCHEDULE:

<u>Planning Phase</u>	<u>Start</u>	<u>End</u>	<u>Subcontractor</u>
<u>Task</u> Not Applicable (project in implementation phase)			
<u>Implementation Phase</u>	<u>Start</u> 10/97	<u>End</u> 4/98	<u>Subcontractor</u> As needed
<u>Task</u> FY98: Fabricate and install Phase 2 screens, associated mechanical components and/or miscellaneous steel for five diversions programed by the Yakima Basin Fish Passage Technical Work Group (Fogarty, John Cox, Old Union, Younger, Musetti).			
<u>O&M Phase</u>	<u>Start</u>	<u>End</u>	<u>Subcontractor</u>
<u>Task</u> Not Applicable (see Project 9200900)			

PROJECT COMPLETION DATE:

2002

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

Fabrication schedule may slip if associated civil works construction is delayed due to problems with land acquisition, rights-of-way, permitting or budget shortfall. Projects deferred to FY99 will result in budget carryover.

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Expected performance of target population or quality change in land area affected:

Emergent fry, fingerling and smolt survival/production should increase for all target stocks as a result of new fish screen fabrication that replaces functionally obsolete facilities. Survival benefits begin to accrue as soon as the new facility is operational.

Present utilization and convservation potential of target population or area:

Target stocks are too weak to support in-basin harvest other than very minor Yakama Indian Nation tribal C&S fishery on spring chinook. Virtually all returning fish are necessary for spawning and stock rebuilding.

Assumed historic status of utilization and conservation potential:

Target stocks once supported significant harvest by tribal and non-tribal fishers in ocean, Columbia R. and terminal area fisheries.

Long term expected utilization and conservation potential for target population or habitat:

The fishery co-managers (WDFW and Yakama Nation) objective is to restore Yakima Basin anadromous fish stocks to levels capable of supporting significant terminal area tribal and sport harvest.

Contribution toward long-term goal:

Phase 2 fish screen construction (and O&M) is a critical component of the overall strategy to restore fish runs by improving survival of wild and hatchery supplementation juvenile salmonids.

Indirect biological or environmental changes:

Resident fish populations that support valuable sport fisheries (e.g. the "blue ribbon" Yakima R. wild rainbow trout fishery) also benefit from new fish screens built, operated and properly maintained to protect anadromous species.

Physical products:

Fish screens, drive mechanisms, lifting gantries, and all misc. metalwork for five diversions described above.

Environmental attributes affected by the project:

None

Changes assumed or expected for affected environmental attributes:

N/A

Measure of attribute changes:

N/A

Assessment of effects on project outcomes of critical uncertainty:

N/A

Information products:

N/A

Coordination outcomes:

N/A

MONITORING APPROACH

Target stock monitoring is performed by the Yakama Indian Nation at Prosser Dam and Roza Dam. Both adults and migrant smolts are enumerated each year to track stock status. Fish screen evaluation studies (Proj. No. 8506200) define the fish protection performance of individual or types of Phase 2 screen facilities. No M&E is directly performed as a task of this project.

Provisions to monitor population status or habitat quality:

N/A (see above)

Data analysis and evaluation:

N/A

Information feed back to management decisions:

Information from the related fish screen evaluation project (8506200) performed by Pacific Northwest Labs (Battelle) feeds back into the design, fabrication and O&M components of the Yakima Phase 2 program. Results of PNL studies have been used by WDFW and BOR to improve fish screen designs and fabrication methods to increase fish protection and survival rates. Evaluation results have also been used to fine tune O&M procedures to increase screen life and maximize fish protection in the long term.

Critical uncertainties affecting project's outcomes:

N/A

EVALUATION

For this project, success is measured in the steady completion of state-of-the-art fish screen facilities at Yakima Basin gravity water diversions.

Incorporating new information regarding uncertainties:

N/A

Increasing public awareness of F&W activities:

Fish screen construction activities are very visible to the public and are a tangible testimony that the region is actively working to recover weak anadromous fish stocks in the Yakima Basin.

RELATIONSHIPS

RELATED BPA PROJECT

8506200

9200900

9107500

RELATIONSHIP

Scientific evaluation of completed screen facilities provides "adaptive management" feedback for improvements

Operation & preventative maintenance of completed Phase 2 screen projects necessary to realize fish benefits and prolong project life

Mandatory linkage between screen fabrication and civil works construction managed by BOR

RELATED NON-BPA PROJECT

N/A

RELATIONSHIP

OPPORTUNITIES FOR COOPERATION:

Project accomplishments and budget expenditures are linked to progress on Project # 9107500. Delays in screen civil works construction due to bottlenecks in design, property acquisition (r-o-w or easements) or funding constraints affect the amount of shop fabrication completed each year. WDFW attempts to predict the amount of civil construction that will be accomplished in a budget cycle and adjusts the annual fabrication budget to match. Subsequent delays in civil works construction may result in deferring shop fabrication and carrying over funds to the next fiscal year. WDFW coordinates closely with the BOR Yakima Construction Office to assure that fabricated screens and miscell. metalwork precisely match the civil works structure. WDFW also achieves fabrication/installation cost savings by sharing equipment with BOR's Yakima Fish Facilities O&M Branch.

COSTS AND FTE

1997 Planned: \$213,815

FUTURE FUNDING NEEDS:

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$300,000		100%	0%
O&M (see Project 9200900)				
1999	\$300,000		100%	0%
2000	\$300,000		100%	0%
2001	\$150,000		100%	0%
2002	\$100,000		100%	0%

PAST OBLIGATIONS (incl. 1997 if done):

<u>FY</u>	<u>OBLIGATED</u>
1991	\$461,175
1992	\$579,358
1993	\$647,281
1995	\$102,670
1996	\$300,000
1997	\$213,815

TOTAL: \$2,304,299

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

FY OTHER FUNDING SOURCE

1998 N/A

AMOUNT IN-KIND VALUE

OTHER NON-FINANCIAL SUPPORTERS:

The Yakima Screen Shop receives fabrication services (sand blasting and painting) from the Bureau of Reclamation (BOR), Yakima Field Office, Fish Facilities O&M Branch. Numerous local vendors provide materials and services necessary to fabricate Phase 2 screen metalwork.

LONGER TERM COSTS:

Project completion anticipated by the end of FY 2002

N/A

1997 OVERHEAD PERCENT: 23.3% (19% Agency Administrative O/H + 4.3% Yakima Screen Shop Fixed Operating Cost)

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:

O/H applied to total direct project costs

CONTRACTOR FTE:

Maximum direct YSS staff employed on project = 10 (three permanent, full-time metal fabrication trades employees; 1 to 3 temporary (9 mo.) fabrication positions; four permanent management and clerical employees work part-time on this project)

SUBCONTRACTOR FTE:

Intermittent use of sub-contractors on an as needed basis. BOR (sand blast & paint contract): 2 man weeks/yr; HIC, Inc. (alternate sand blast & paint contract): 2 man weeks/yr
